



# 2012 Minerals Yearbook

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## CROATIA

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# THE MINERAL INDUSTRY OF CROATIA

By Harold R. Newman

Petroleum extraction and refining were the major economic activities of Croatia's mineral industry. Mineral resources included bauxite, clays, coal, gypsum, mica, natural asphalt, petroleum, and salt. The country remained reliant on mineral commodity imports for its industrial needs. Most of the output of industrial minerals was consumed by the domestic market.

The Energy and Mining Directorate (EMD) is responsible for the administrative and professional activities related to the energy and mining sectors, including drafting laws and regulations for these sectors. The EMD also coordinates energy and mining policy, including the country's energy development strategy, and provides advice for the implementation of energy policy (Energy and Mining Directorate, 2012a).

The Mining Act, which established Croatia's mining framework, was passed by the Government on June 19, 2009. In 2011, the Government passed amendments to the Mining Act to fill the gaps in the original mining framework. The amendments introduced, among other changes, the following four articles: Article 17, which provides for compensation to owners of property damaged as a result of the exploration and (or) exploitation by persons or legal entities that do not hold the required permits (These persons or legal entities will be responsible for the compensation.); Article 40, which obliges the holder of a license to submit a report on mineral reserves; Article 51, which requires bidders for public tenders for the exploration and (or) exploitation of mineral reserves to submit a statement that the bidder is not involved in any proceedings for unlawful exploration and (or) exploitation; and Article 136a, which states that a holder of the rights to mineral reserves will lose the rights automatically if exploration or exploitation is not commenced within the timeframe set out in the license. The amendments were in line with the overall tone of the Mining Act, which is designed to give control over mineral reserves back to the state (International Law Office, 2012).

The Energy Department carries out activities pertaining to the energy balance of the country (including analyzing the energy flows) and to the building of energy facilities. The Department proposes activities relating to energy efficiency. The Department also participates in the establishment of bilateral and multilateral agreements in the energy sector. The Energy Law of 2001, as amended in 2004 and 2007, contains measures aimed at ensuring a secure and reliable energy supply and efficient power generation and use, and addresses other key issues relevant to the energy sector. The Government's Energy Development Strategy, which was adopted in 2009 and covers the period 2009 to 2020, includes a commitment to include 20% of renewable energy in the country's total energy consumption by 2020 (Energy and Mining Directorate, 2012b, p. 8).

The Mining Department carries out administrative and oversight activities related to the exploration for and extraction of mineral raw materials, except clay, construction stone, and sand and gravel. The Mining Department also issues licenses

for the exploration for and extraction of mineral raw materials, issues building permits for mining facilities and plants, and grants approvals for mining concessions and the extraction of mineral raw materials (Energy and Mining Directorate, 2012c).

The Hrvatski Geološki Institut (Croatian Geological Survey [CGS]), which is part of the EMD, is responsible for the analysis, collection, distribution, evaluation, and storage of geologic information. The CGS is the leading public research institute in Croatia in the field of geosciences and geological engineering. CGS collects geologic data for such purposes as exploration for mineral resources; environmental protection, including the protection of the fresh water supply; and urban planning (Croatian Geological Survey, 2012).

## Minerals in the National Economy

In 2012, mineral production was not significant to Croatia's national economy. Croatia had a trade deficit with respect to mining and quarrying materials. Croatia's main trading partner was the European Union (EU), and its main export partners were Italy, which received 15% of Croatia's total exports; Bosnia (13%); Germany (11%); Slovenia (9%); and Austria (7%). Croatia's main import partners were Italy (17%), Germany (13%), Russia (8%), China (7%), and Slovenia (6%). The financial crisis in the EU that began in 2008 and continued in 2012 lowered external demand for Croatia's industrial exports. Economic recovery in the EU was expected to be slow and to continue to dampen private consumption. The Government was continuing with the process of entering the EU after a decade of carrying out the laws and reforms needed to bring Croatia's laws and standards in line with those of the EU. Croatia's entry into the EU was scheduled to take place on July 1, 2013 (U.S. Central Intelligence Agency, 2013).

## Mineral Trade

U.S. trade in goods with Croatia was valued at \$310 million in exports and \$444 million in imports. U.S. exports to Croatia included, in order of value, metallurgical-grade coal, \$80 million; other coal and fuels, \$31 million; and petroleum products, \$22 million. U.S. imports from Croatia included, in order of value, other petroleum products valued at \$8 million; iron and steel products, \$1 million; and iron and steel manufactures, \$822,000 (U.S. Census Bureau, 2012a, b).

## Production

In 2012, Croatia's mineral production was limited and continued at more or less the same levels as in 2011, with the exception of cement, gypsum, salt, sand and gravel, and silica sand, for which production decreased. Production of steel also decreased owing to the expansion and modernization work in progress at the CMC Sisak d.o.o. plant. There were no other significant changes in mineral production reported. Croatia

no longer mined metallic ores, and metal production was based on domestic and foreign secondary raw materials. Industrial mineral production was sufficient to meet most of the country's domestic requirements. Mineral fuels, including natural gas and petroleum, were produced, although not in sufficient quantities to satisfy domestic demand (table 1).

## Structure of the Mineral Industry

Table 2 is a list of the major mineral industry facilities.

## Commodity Review

### Metals

**Aluminum.**—TLM-TVP d.d. had a long history of producing and processing aluminum products. The plant's production process begins at the foundry cast house where the liquid metal is cast into aluminum blocks and then transferred to the hot-rolling mill. In the hot-rolling mill, the blocks are reduced to a thickness of from 3.5 millimeters (mm) to 15 mm. The strips are then transferred to the cold-rolling mill where they are rolled to sheets with final specifications of 0.5 mm to 4 mm in thickness. These products are used in construction and metal structures (TLM-TVP d.d., 2012).

**Iron and Steel.**—Commercial Metals Co, (CMC) of the United States announced that it had concluded the sale of its Croatian subsidiary, CMC Sisak d.d., to the Danieli Group of Italy for about \$30.4 million. The transaction included the land, the steel works, and the rolling mills, but not the plant for the cold processing of steel. The CMC Sisak facility is located about 50 kilometers east of Zagreb. Danieli was one of the world's leading suppliers of steel products (Daily.tportal.hr, 2012).

In 2012, Adria Celik d.o.o. announced that it had started testing a steel production unit at the Zeljezara Split d.d. steel works. Adria Celik stated that the testing was a demanding process as the plant had been idle for about 4 years. Testing was to begin with the cold-testing phase, in which no steel is melted, followed by the hot-testing phase, during which time certain segments, such as the electric arc and cupola furnaces and the continuous casting and dedusting systems, would be tested. After the equipment and machinery have been tested and the necessary permits obtained, the steel mill was expected to begin regular production in 2013 (SeeNews, 2013).

### Industrial Minerals

As of 2007 (the latest year for which these data were available), the mineral resource sites in Croatia included, in numerical order of the number of sites, crushed stone aggregates, 253 sites; dimension stone, 103 sites; sand and gravel, 82 sites; clay, 49 sites; bauxite, 15 sites; and gypsum, 9 sites. No information regarding the exploration and (or) exploitation status of these sites was available in 2012 (Slobodan and others, 2007).

**Cement.**—Holcim (Hrvatska) d.o.o., which was a subsidiary of Holcim Ltd. of Switzerland, announced that it would invest €1 million (\$1.4 million<sup>1</sup>) for the reconstruction of a clinker

cooler at Koromacno to increase thermal energy efficiency and decrease maintenance costs. In addition, Holcim aimed to advance its use of alternate fuels to more than 50% of its energy intake. In 2012, Holcim used coal, which was supplemented by emulsions, old tires, sawdust, solid recovered fuels, and waste oil as fuel for energy generation (Aggregate Research, 2012).

### Mineral Fuels

**Natural Gas and Petroleum.**—INA-Industrija nafte d.d. (INA) was a leading Croatian mineral fuels company and was involved in natural gas and petroleum exploration and production, petroleum refining, and petroleum products distribution. INA conducted exploration and production both offshore in the Adriatic Sea and onshore in the Pannonian basin. INA also operated in Angola and Egypt (INA-Industrija nafte d.d., 2012a).

In 2012, INA and its partners operated 19 platforms in the Adriatic Sea. The Marcia and the North Adriatic fields hosted 17 platforms, 16 of which were petroleum production platforms and 1 of which was the Ivana K processing platform. The other two were natural gas production platforms in the Irena and the Izabela fields. Edina d.d., which was a joint venture between Edison Gas SpA of Italy and INA, was the operating company for both these fields. Five natural gas wells in these fields had been completed and put online (INA-Industrija nafte d.d., 2012b).

In 2012, INA owned and operated two petroleum refineries located at Rijeka and Sisak for the production of petroleum and refined products, as well as networks for the distribution of petroleum and refined products. The refinery at Rijeka was located near the port and had access to deep-draft ships and the Jadranski Naftovod plc (JANAF) petroleum pipeline system. The Rijeka refinery processed between 2 and 3 million metric tons per year (Mt/yr) of petroleum and other petroleum products for domestic and foreign markets. The Sisak refinery processed between 2 and 2.2 Mt/yr of petroleum and other petroleum products, which were sold on both the domestic and the export markets. Sisak processed domestic petroleum as well as petroleum imported through the Russian pipelines Druzba 1 and Druzba 2. Petroleum was also supplied by the JANAF pipeline (INA-Industrija nafte d.d., 2012c).

### Outlook

Croatia is expected to remain a modest producer of mineral commodities, although increases in the production of industrial minerals could take place if the existing infrastructure is modernized. Mineral fuels are expected to remain the most important outputs of Croatia's mineral sector, although the country will most likely remain heavily dependent on imports of mineral fuels.

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<sup>1</sup>Where necessary, values have been converted from euro area euros (€) to U.S. dollars (US\$) at a rate of €0.74=US\$1.00.

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TABLE 1  
CROATIA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2008	2009	2010	2011	2012 <sup>e</sup>	
<b>METALS</b>						
Aluminum: <sup>e,3</sup>						
Alloys	31,582 <sup>3</sup>	30,000	30,000	32,000	31,000	
Semimanufactures:						
Rolled	52,135 <sup>3</sup>	50,000	50,000	60,000	55,000	
Extruded	6,287 <sup>3</sup>	6,000	6,000	8,000	8,000	
Total	58,422 <sup>3</sup>	56,000	56,000	68,000	63,000	
Steel:						
Crude, from electric furnaces	121,759	51,583	95,000	95,440 <sup>r</sup>	109,000	
Semimanufactures, hot rolled <sup>e</sup>	121,000	51,000	103,000	100,000	50,000	
<b>INDUSTRIAL MINERALS</b>						
Cement	thousand metric tons	3,637	2,823	5,078	2,570 <sup>r</sup>	1,244 <sup>3</sup>
Clays:						
Bentonite		19,759	NA	NA	NA	NA
Ceramic clay <sup>c</sup>		300,000	NA	NA	NA	NA
Gypsum and anhydrite, crude		329,649	221,888	248,675	231,008	182,557 <sup>3</sup>
Lime	thousand metric tons	541	350	330	271	300
Nitrogen, N content of ammonia <sup>e</sup>	do.	300	300	358 <sup>3</sup>	367 <sup>3</sup>	350
Pumice and related materials, volcanic tuff <sup>e</sup>	do.	15	15	15	15	20
Salt, all sources <sup>c</sup>		30,000	30,000	30,000	21,160 <sup>r,3</sup>	18,342 <sup>3</sup>
Sand and gravel, excluding glass sand <sup>c</sup>	thousand metric tons	3,500 <sup>r</sup>	3,250 <sup>r</sup>	3,500 <sup>r</sup>	4,003 <sup>r,3</sup>	3,682 <sup>3</sup>
Silica sand (quartz, quartzite, glass sand)		150,000 <sup>e</sup>	278,231	240,919	227,437	225,000
Stone: <sup>e</sup>						
Crushed and brown	thousand metric tons	18,000	17,652 <sup>3</sup>	13,270 <sup>3</sup>	13,033 <sup>3</sup>	14,000
Dimension stone		1,500,000	1,400,000	1,200,000	1,400,000	1,500,000
Sulfur, byproduct of petroleum		9,819	10,315	6,834	7,254	7,000

See footnotes at end of table.

TABLE 1—Continued  
CROATIA: PRODUCTION OF MINERAL COMMODITIES<sup>1</sup>

(Metric tons unless otherwise specified)

Commodity <sup>2</sup>	2008	2009	2010	2011	2012 <sup>e</sup>	
MINERAL FUELS AND RELATED MATERIALS						
Carbon black	16,903	3,976	--	--	--	
Natural gas, gross production	million cubic meters	2,729	2,705	2,727	2,471	2,013 <sup>3</sup>
Petroleum						
Crude, gross weight, includes condensate	thousand 42-gallon barrels	6,200	5,760	5,340	4,983 <sup>r,3</sup>	4,479 <sup>3</sup>
Refinery products: do.						
Distillate fuel oil		10,403	11,096	9,746	10,000 <sup>e</sup>	12,000
Residual fuel oil		7,519	7,592	6,242	6,500 <sup>e</sup>	7,000
Jet fuel		767	733	741	750 <sup>e</sup>	750
Liquefied petroleum gases		2,957	3,504	4,344	4,400 <sup>e</sup>	4,500
Motor gasoline		8,541	10,293	9,344	9,500 <sup>e</sup>	9,800
Other products		4,344	5,658	5,256	5,400 <sup>e</sup>	5,600
Total		34,531 <sup>r</sup>	38,876 <sup>r</sup>	35,673 <sup>r</sup>	36,600 <sup>r,e</sup>	39,700

<sup>e</sup>Estimated; estimated data are rounded to no more than three significant digits. <sup>r</sup>Revised. do. Ditto. NA Not available. -- Zero.

<sup>1</sup>Table includes data available through August 31, 2013.

<sup>2</sup>In addition to commodities listed, common clay and other industrial minerals may have been produced, but available information was inadequate to make reliable estimates of output.

<sup>3</sup>Reported figure.

TABLE 2  
CROATIA: STRUCTURE OF THE MINERAL INDUSTRY IN 2012

(Thousand metric tons unless otherwise specified)

Commodity	Major operating companies	Location of main facilities	Annual capacity	
Aluminum, semimanufactures	TLM-TVP d.d.	Sibenik	50 <sup>e</sup>	
Do.	Top-Tvornica Olovni i Aluminijских	Savska	NA	
Carbon black	Petrokemija d.d.	Kutina	NA	
Cement	Cemex Hrvatska d.d. (CEMEX S.A.B. de C.V., 100%)	Plants at Kastel Sucurac, Solin, and Solin Majdan	2,400	
Do.	Holcim (Hrvatska) d.o.o. (Holcim Ltd., 100%)	Plant at Koromacno	1,000	
Do.	Istra Cement International d.d. (Part of CALUCEM Group)	Plant at Pula	NA	
Do.	Tvornica Cementa Umag d.o.o.	Cement plant at Umag	350	
Do.	million cubic meters	Nasicecement d.d. (Nexe Grupa d.d.)	Nasice	1,000
Natural gas	INA-Industrija nafte d.d. (INA)	Natural gasfields at Molve, offshore platforms in the Adriatic Sea, and other locations	3,000	
Petroleum:				
Crude	thousand 42-gallon barrels per day	do.	Oilfields at Kalinovac, Sandrovac, Struzec, Zutica, and other locations	20 <sup>e</sup>
Refined		do.	Refinery at Rijeka (Urinj)	3,500
Do.		do.	Refinery at Sisak	2,500
Salt	Solana Pag d.d.	Pag Island (marine salt)	NA	
Steel, crude	CMC Sisak d.o.o. (Commercial Metals International AG, 100%)	Plant at Sisak	80	
Do.	Zeljezara Split d.d. (Adria Celik d.o.o., 50%, and Techcom GmbH, 50%)	Plant at Split (closed)	185 <sup>1</sup>	

<sup>e</sup>Estimated. Do., do. Ditto. NA Not available.

<sup>1</sup>Zeljezara Split d.d. stopped production in 2009, and production remained suspended throughout 2012. Production was expected to resume in 2013.